

Emergency Department Draft Protocol

Adrenal Insufficiency

Purpose: To rapidly identify patients with an adrenal crisis, perform a sufficient diagnostic evaluation in unknown cases, and administer appropriate therapy.

Indications: Consider diagnostic and therapeutic intervention in patients with the following symptoms, physical exam signs, and preliminary laboratory findings:

- 1) Persistent vomiting and anorexia without diarrhea accompanied by weight loss
- 2) History of salt cravings or recent tanning of skin
- 3) Mental status changes
- 4) Presenting complaints of extreme fatigue, fainting, or light-headedness
- 5) Cardiovascular instability: Hypotension, tachycardia, and other signs of shock only minimally responsive to crystalloid or colloid fluid boluses.
- 6) Electrolyte Abnormalities: hyponatremia, hyperkalemia, hypoglycemia, normal anion gap metabolic acidosis
- 7) Eosinophilia

Special Populations: Maintain high clinical suspicion for an adrenal crisis in patients with:

- 1) An underlying disorder of the adrenal gland requiring hormone (glucocorticoids and/or mineralcorticoid) replacement including:
 - i. Congenital Adrenal Hyperplasia (CAH), primary adrenal insufficiency (Addison's disease), adrenoleukodystrophy, panhypopituitarism or other forms of central (ACTH deficiency) adrenal insufficiency.
- 2) An underlying disorder requiring chronic administration of glucocorticoids
- 3) Other known autoimmune diseases such as diabetes mellitus, hypothyroidism, or hypoparathyroidism.
- 4) Suspected meningococemia
- 5) History of abdominal trauma and suspected adrenal hemorrhage

Diagnostic Evaluation/Intervention For Suspected Adrenal Crisis:

- 1) Assign Emergency Department nurse and room for patient, place patient on cardiac monitor.
- 2) Secure intravenous access with two peripheral lines
- 3) Administer Intravenous Fluids and obtain laboratory tests
 - a. Normal Saline (0.9 NaCl) or Lactated Ringers Solution should be given in 20cc/kg bolus over 20 to 30 minutes as needed to support intravascular volume.
 - b. D10W can be administered 5cc/kg as necessary to correct hypoglycemia.
 - c. In patients without a previous history of adrenal disorders, the following laboratory tests should be obtained prior to initiation of hydrocortisone therapy (if possible):
 - i. ACTH - purple top (EDTA) 3 ml (min 1.2 ml) **ON ICE**
 - ii. Cortisol - red or gold top (gel) or red top (no gel) 1 ml
 - iii. 17-Hydroxyprogesterone (if CAH suspected) - Red top (no gel) 1 ml
 - iv. Plasma Renin Activity (if hyponatremic and hyperkalemic) - purple top (EDTA) 4 ml (min 1.4 ml)
 - v. Aldosterone (if hyponatremic and hyperkalemic) - Red or gold (gel) or red top (no gel) 2 ml (min 1.2 ml)
- 4) Administer Glucocorticoids
 - a. Hydrocortisone Acetate 50-100 mg/m² intravenous bolus is the preferred first line agent, since it also acts as a mineralcorticoid
 - b. If rapid, accurate assessment of length/height is unobtainable, use the following weight based dosing scheme:
 - i. Give Hydrocortisone 25 mg IV for weight 4-10 kg
 - ii. Give Hydrocortisone 50 mg IV for weight 11-34 kg
 - iii. Give Hydrocortisone 100 mg IV for weight ≥ 35 kg
- 5) Maintenance Fluids:
 - a. Patient should be placed on D5NS (No potassium) at 1.5X maintenance rate IV
- 6) Maintenance Glucocorticoids
 - a. After initial IV bolus, hydrocortisone should be continued at a dose of 50 mg/m²/day divided every 6 hours for 24 hours then decreased to 25 mg/m²/day divided every 6 hours.
- 7) Mineralcorticoids
 - c. No mineralcorticoids need be given if hydrocortisone is given at above stress doses and intravenous fluids consist of 0.9 NaCl.